Sensor Fuzed Weapon (SFW)

The CBU-97 Sensor Fuzed Weapon (SFW) is a 1,000 pound class, unpowered, air-delivered, wide-area smart munition intended to provide multiple kills per pass against armored and support vehicles. The system is certified on the A-10, B-1, B-2, B-52, F-15, and F-16 and is designed to be compatible with various United States Navy/United States Marine Corps and NATO aircraft. The weapon is capable of delivery in adverse weather conditions, day or night, at various altitudes and airspeeds. SFW consists of a SUU-66/B Tactical Munitions Dispenser (TMD), which houses ten BLU-108 submunitions. Each submunition contains four projectiles, an orientation and stabilization system, a radar altimeter, and a rocket motor. After spin-up and release from the submunitions, the projectiles scan the area under their flight path with a two-color passive infrared sensor. The Preplanned Product Improvement (P^3I) projectile also incorporates an active laser range finder. Upon detecting a valid target, an electronic pulse detonates an explosive charge driving an explosively formed penetrator into the target.

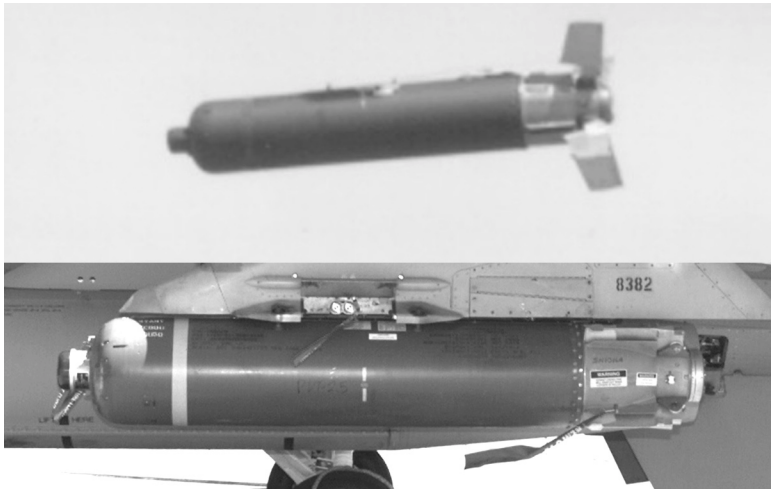
The SFW can be delivered at low or high altitudes and at low through supersonic speeds. High altitude deliveries are more precise when the SFW is configured with the Wind Corrected Munitions Dispenser (WCMD) tail kit. WCMD is an inertial guidance tail kit that replaces the existing tail section of current tactical munitions dispensers to improve delivery accuracy when released from medium to high altitude. Retrofit of SFW with WCMD tail kits began in April 2001, designated the CBU-105.

In 1996, the Air Force instituted an SFW P^3I program, which implements three major improvements: performance against countermeasures; performance against softer targets without degrading current target-set performance; and increased area coverage. The sensor is upgraded to enhance its performance against cooler targets and improve weapon aimpoint accuracy, as well. The SFW P^3I submunition is designated BLU-108B/B and the all-up-round is designated the CBU-105B/B with the WCMD tail kit.

Producibility Enhancement Program (PEP) hardware upgrades were also initiated for SFW to reduce costs and improve the ability to be produced through design improvements. PEP-1 involved electronic and mechanical changes to the projectile. FOT&E of PEP-1 concluded in 1998 and test results indicate PEP-1 changes did not degrade the performance of SFW.

The LFT&E strategy for SFW P^3I includes collection of sensor data against a representative target set, repeat of shot lines from the original (1990) SFW LFT&E test to compare SFW P3I against baseline results, and two additional shots to further evaluate performance.

The Air Force approved production of the SFW P^3I in January 2001. WCMD Milestone III was approved in February 2001. No further acquisition milestones are planned for SFW.



Analysis of recently concluded Wind Corrected Munitions Dispenser, Sensor Fuzed Weapon Preplanned Product Improvement tests also indicate that the P^3I-variant meets requirements. DOT&E awaits the Air Force final report. This report should also provide documentation currently lacking in the field with respect to SFW P^3I performance in operationally relevant conditions.

TEST & EVALUATION ACTIVITY

SFW P^3I Developmental Test/Operational Test flight test weapon deliveries are complete.

All tests contributing to LFT&E of the SFW P^3I concluded in FY01. DOT&E provided Congress with an LFT&E report on system lethality in March 2002.

TEST & EVALUATION ASSESSMENT

Previous operational tests of the WCMD validate additional SFW employment capability from medium and high altitudes. Analysis of recently concluded WCMD, SFW P^3I tests also indicate that the P^3I-variant meets requirements. DOT&E awaits the overdue Air Force final report, which should resolve disagreements that exist with data previously published by various Air Force test agencies. This report should also provide documentation currently lacking in the field with respect to SFW P^3I performance in operationally relevant conditions.

LFT&E of SFW P^3I was supported by captive flight testing of the sensor system over moving and stationary threat targets, as well as modeling and simulation of lethality against threat targets not represented in testing. However, LFT&E of SFW P^3I did not include tactical drops of the munition against moving formations of threat vehicles. Future tests of munitions that rely on sensor-fuzed warheads will require either realistic end-to-end testing or a robust validation of the analytical techniques used to link individual elements of the engagement sequence. Test and analytical results describing detailed system technical performance and system lethality against the expected targets are classified, and are included in the final LFT&E report. LFT&E testing was adequate to support an evaluation of terminal lethality against the range of expected targets.